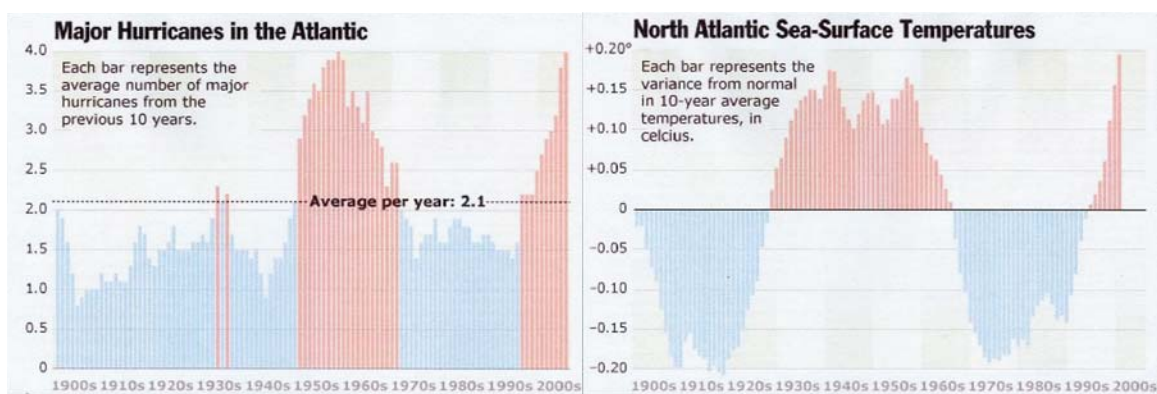


Hurricanes are believed to come in cycles of active seasons. Periods of heightened activity usually take place in multidecadal oscillations that last 20 to 30 years or longer, often referred to as the Atlantic Multidecadal Oscillation (AMO). The current period of hurricane activity (1995–present) is similar to previous eras of increased activity (i.e., 1950 to 1969). Every season has been above average during the current cycle, except the two El Niño years of 1997 and 2002. The increase is attributed to warmer ocean waters, low wind shear, and favorable mid-level easterly winds. El Niño and La Niña cycles play a large role in determining these conditions in addition to convective rainfall variability (Landsea and Gray 1992; Bove et al. 1998; Pielke and Landsea 1999; Kerr 2000; Enfield et al. 2001; Elsner et al. 2006; Bell and Chelliah 2006). In contrast, periods of below-normal activity occur, such as the period from 1970 to 1994. During this 24-year period, just three seasons had activity slightly above average and about half were below (Bell and Chelliah 2006). Another period of below average activity occurred in 1900–1925 following years of intense storms from 1870 to 1899. These multidecadal oscillations have a significant correlation with rainfall, severe droughts, and tropical storms. The Dustbowl of the 1930s and the 1950s drought occurred during a positive AMO, and inflow to Lake Okeechobee due to rainfall in Florida increased as much as 40% during AMO extremes (Enfield et al. 2001). Hurricane development during warm phases is at least twice as numerous as during cold phases of the AMO. Studies of paleoclimate proxies suggest that these changes have been occurring for at least the past millennium (Kerr 2000).



**Figure 1. Major hurricanes in the Atlantic basin (left) and north Atlantic sea-surface temperatures (source: Unisys, prepared by J. Duchneskie for the Philadelphia Inquirer).**